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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
AN, SANG WOOK	
ART UNIT	**PAPER NUMBER**
1732	

DATE MAILED: 12/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/716,226	BOGSTAD ET AL.	
	Examiner	Art Unit	
	Sang W. An	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 4 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 1 writes infrared energy sources as being "inversely proportional" to the wall thickness of the preform directly apposing the infrared energy sources. Claim 4 writes infrared energy sources are "closest to the preform wall apposite a portion of the preform having the greatest thickness." In claim 1, the phrase "inversely proportional" is interpreted to mean the greater the thickness of the preform the closer the infrared energy source would be to the apposite preform wall. Therefore, this would mean that the infrared energy sources are closest to the preform wall apposite a portion of the preform having the greatest thickness. Consequently, claim 4 fails to further limit what is claimed in claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 1, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gottlieb (US 6258313) in view of Geankoplis, Transport Processes and Unit Operations *Third Edition* (Pg 216-217) and Tipler, Physics For Scientists and Engineers (Pg 445-446). As to claim 1, Gottlieb teaches a reheat stretch blow-molding process comprising: preparing a polypropylene preform (Col. 3 Line 12) and heating the preform, utilizing a plurality of infrared energy sources (Col. 4 Line 55). As to claim 5, Gottlieb teaches infrared energy sources comprising heat lamps (Col. 4 Line 54).

However Gottlieb does not explicitly teach the inversely proportional relationship between the distance of the energy source to the adjacent wall and the thickness of the wall, as also disclosed in claim 4. Nevertheless as to claim 4, Gottlieb does teach controlling the temperature of the lamp such that the outside of the preform can be longitudinally differentially heated depending upon the shortness or thickness of the preform in order that the heating rate could be controlled (Col. 5 Line 9). Furthermore, Geankoplis teaches the basic equation of heat transfer which is written as:

$$rate\ of\ heat\ transfer\ process = \frac{driving\ force}{resistance}$$

In our present discussion, the driving force is the temperature difference between the outer wall and the inner wall or simply the energy from the infrared source. The resistance is the thickness of the wall. Upon analyzing the equation, we are able to determine that as the thickness of the wall increases the rate of heat transfer process decreases. In order to compensate for the decrease in the rate, the driving force would need to be increased to maintain a controlled rate. Therefore, this would mean that the temperature or the intensity of the energy would have to be increased. Also, Tipler teaches that the intensity at a given point is related to the power of the source by the following equation:

$$I = \frac{P}{4\pi r^2}$$

Where *I* is the intensity, *P* is the power of the source, and *r* is the distance from the source to the object being heated. The above equation shows that in order to increase the intensity at a given point, the distance, *r*, would need to be decreased, clearly an inverse relationship. Therefore in order to maintain controlled rate of heat transfer process of thicker preforms, one would either increase the temperature of the lamp (as disclosed by Gottlieb) or decrease the distance between the energy source and the preform in order to increase the intensity on the preform wall adjacent to the infrared lamp. Both of these processes perform the same function in substantially the same way (either increasing the heat or decreasing the distance) to achieve the same result (effective heating). Because the two process have shown to pass the "function, way, result" test for equivalents, the two are deemed to be equivalents. Therefore, substituting one equivalent for another would have been obvious. Moreover, it would

have been obvious to the one having ordinary skill in the art at the time of invention to combine Geankoplis' teaching relating the thickness, driving force, and the rate of heat transfer along with Tipler's teaching on the inverse relationship between intensity and the distance between the power source and the object being heated with Gottlieb's reheat stretch blow molding process and his variable temperature control in order to promote adequate heating and temperature control of the process.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gottlieb in view of Geankoplis and Tipler further in view of Zenger et al (US 5251424). Gottlieb in view of Geankoplis and Tipler discloses everything previously mentioned above but does not teach polypropylene comprising polypropylene selected from the group consisting of high, medium, and low-density polypropylene. Zenger, however, teaches blow molding high-density polypropylene for dimensional stability (Col. 7 line 50). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to use Zenger's teaching on the use of high density Polypropylene in the reheat stretch blow-molding process of Gottlieb in view of Geankoplis and Tipler in order to improve the dimensional stability of the blow molded product.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gottlieb in view of Geankoplis and Tipler further in view of Wu et al (US 5925710). Gottlieb in view of Geankoplis and Tipler discloses everything previously mentioned above but does not teach polypropylene containing one or more adjuvants selected from the group consisting of clarifiers, fillers, extenders, lubricants, and infrared energy absorbing agents. Wu, however, teaches incorporating infrared energy absorbing agents in the

preform to reduce the reheat time of the preform (Col. 2 Line 1). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to include Wu's infrared absorbing agents in the reheat stretch blow-molding process of Gottlieb in view of Geankoplis and Tipler in order to reduce the reheat time of the preform.

Claim 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gottlieb in view of Geankoplis, Tipler, Zenger et al, and Wu et al. As to claim 6, Gottlieb teaches a reheat stretch blow-molding process comprising: preparing a polypropylene preform (Col. 3 Line 12) and heating the preform, utilizing a plurality of infrared energy sources (Col. 4 Line 55). As to claim 7, Gottlieb teaches infrared energy sources comprising heat lamps (Col. 4 Line 54).

However Gottlieb does not explicitly teach the inversely proportional relationship between the distance of the energy source to the adjacent wall and the thickness of the wall. Nevertheless, Gottlieb does teach controlling the temperature of the lamp such that the outside of the preform can be longitudinally differentially heated depending upon the shortness or thickness of the preform in order that the heating rate could be controlled (Col. 5 Line 9). Furthermore, Geankoplis teaches the basic equation of heat transfer which is written as:

$$rate\ of\ heat\ transfer\ \ process = \frac{driving\ force}{resis\tan ce}$$

In our present discussion, the driving force is the temperature difference between the outer wall and the inner wall or simply the energy from the infrared source. The resistance is the thickness of the wall. Upon analyzing the equation, we are able to

determine that as the thickness of the wall increases the rate of heat transfer process decreases. In order to compensate for the decrease in the rate, the driving force would need to be increased to maintain a controlled rate. Therefore, this would mean that the temperature or the intensity of the energy would have to be increased. Also, Tipler teaches that the intensity at a given point is related to the power of the source by the following equation:

$$I = \frac{P}{4\pi r^2}$$

Where *I* is the intensity, *P* is the power of the source, and *r* is the distance from the source to the object being heated. The above equation shows that in order to increase the intensity at a given point, the distance, *r*, would need to be decreased, clearly an inverse relationship. Therefore in order to maintain controlled rate of heat transfer process of thicker preforms, one would either increase the temperature of the lamp (as disclosed by Gottlieb) or decrease the distance between the energy source and the preform in order to increase the intensity on the preform wall adjacent to the infrared lamp. Both of these processes perform the same function in substantially the same way (either increasing the heat or decreasing the distance) to achieve the same result (effective heating). Because the two process have shown to pass the "function, way, result" test for equivalents, the two are deemed to be equivalents. Therefore, substituting one equivalent for another would have been obvious. Moreover, it would have been obvious to the one having ordinary skill in the art at the time of invention to combine Geankoplis' teaching relating the thickness, driving force, and the rate of heat transfer along with Tipler's teaching on the inverse relationship between intensity and

the distance between the power source and the object being heated with Gottlieb's reheat stretch blow molding process and his variable temperature control in order to promote adequate heating and temperature control of the process.

Gottlieb in view of Geankoplis and Tipler discloses everything previously mentioned above but does not teach polypropylene comprising polypropylene selected from the group consisting of high, medium, and low-density polypropylene. Zenger, however, teaches blow molding high-density polypropylene for dimensional stability (Col. 7 line 50). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to use Zenger's teaching on the use of high density Polypropylene in the reheat stretch blow-molding process of Gottlieb in view of Geankoplis and Tipler in order to improve the dimensional stability of the blow molded product.

Gottlieb in view of Geankoplis, Tipler, and Zenger discloses everything previously mentioned above but does not teach polypropylene containing one or more adjuvants selected from the group consisting of clarifiers, fillers, extenders, lubricants, and infrared energy absorbing agents. Wu, however, teaches incorporating infrared energy absorbing agents in the preform to reduce the reheat time of the preform (Col. 2 Line 1). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to include Wu's infrared absorbing agents in the reheat stretch blow-molding process of Gottlieb in view of Geankoplis and Tipler in order to reduce the reheat time of the preform.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang W. An whose telephone number is (571) 272-1997. The examiner can normally be reached on Mon-Fri 7 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SWA

MICHAEL P. COLAIANNI
SUPERVISORY PATENT EXAMINER